

WHAT IS CLAIMED IS:

- 1 1. A cantilever supported vehicle seating system for a vehicle with the
2 vehicle having a floor, the seating system comprising:
 - 3 a cantilever base structure coupled to the vehicle and extending longitudinally
4 in the middle of the vehicle;
 - 5 a first pair of occupant seats, with each seat cantilever coupled to the
6 cantilever base structure and with each seat of the first pair of occupant seats
7 including a seat back and a seat base.; and
 - 8 a second pair of occupant seats, with each seat cantilever coupled to the
9 cantilever base structure a spaced distance from the first pair of occupant seats and
10 with each seat of the second pair of occupant seats including a seat back and a seat
11 base, with the seat base having a seat bottom.
- 1 2. The cantilever supported vehicle seating system of claim 1, wherein
2 the cantilever base structure is integrally formed with the vehicle floor.
- 1 3. The cantilever supported vehicle seating system of claim 1, wherein
2 the seat back of each seat is configured to fold down over the seat base to form a
3 folded seat.
- 1 4. The cantilever supported vehicle seating system of claim 3, including a
2 cross beam member connected to the cantilever base structure and configured to
3 support the second pair of occupant seats.
- 1 5. The cantilever support vehicle seating system of claim 3, including a
2 recline mechanism coupled to the seat back and seat base to move the seat back with
3 respect to the seat base.
- 1 6. The cantilever supported vehicle seating system of claim 4, wherein
2 the folded seats of the second pair of occupant seats is rotatably movable from a first
3 position to a second position, wherein the seat bottom faces away from the vehicle
4 floor.

1 7. The cantilever supported vehicle seating system of claim 6, wherein
2 the seat bottom includes a plurality of cargo tie-downs.

1 8. The cantilever supported vehicle seating system of claim 1, wherein
2 each seat of the first pair of occupant seats is configured for at least one of a fore, aft,
3 up, down, and rotation movement of one of the seat base and seat back.

1 9. The cantilever supported vehicle seating system of claim 8, including
2 a seat adjustment mechanism for adjustment movements of the seat.

1 10. The cantilever supported vehicle seating system of claim 1, including a
2 reinforcement member coupled to the cantilever base structure and positioned under
3 the seat base of each one of the first and second pair of occupant seats.

1 11. The cantilever supported vehicle seating system of claim 10, including
2 a shroud member configured to contact the reinforcement member, with the shroud
3 member coupled to the cantilever base structure.

1 12. The cantilever supported vehicle seating system of claim 11, wherein
2 the shroud member is also engaged in a slot defined in the vehicle floor.

1 13. The cantilever supported vehicle seating system of claim 1, including a
2 seat support structure comprising:

3 a carrier member configured to movably attach to the cantilever base structure;
4 and

5 a first cantilever support member having a distal end and coupled to the carrier
6 member and to the seat base of each of the first pair of occupant seats.

7 14. The cantilever supported vehicle seating system of claim 13, including
8 a second cantilever support member having a distal end and coupled to the carrier
9 member and to the seat base of each of the first pair of occupant seats.

1 15. The cantilever supported vehicle seating system of claim 14, wherein
2 the distal ends of each of the first and second cantilever support members are not
3 connected to any other structure of the vehicle.

1 16. The cantilever supported vehicle seating system of claim 15, wherein
2 the first and second cantilever support members are configured in a triangular shape.

1 17. The cantilever supported vehicle seating system of claim 13, wherein
2 the cantilever base structure includes a track assembly configured to engage the
3 carrier member.

1 18. The cantilever supported vehicle seating system of claim 17, including
2 an electric motor drive mechanism coupled to the carrier member to move the carrier
3 member along the track assembly.

1 19. The cantilever supported vehicle seating system of claim 13, including
2 an integrated seat belt having a shoulder belt.

1 20. The cantilever supported vehicle seating system of claim 19, wherein
2 the seat belt has one end including a retractor coupled to the cantilever support
3 member and another end coupled to the cantilever base structure.

1 21. A cantilever base support structure for use in a vehicle, with the
2 vehicle having a floor, the cantilever base support structure comprising:

3 a plurality of cantilever support beams extending longitudinally in the vehicle,
4 with each support beam having a first end and a second end;

5 a first end support plate coupled to each first end of each cantilever support
6 beam, and with the first end support plate coupled to the vehicle floor; and

7 a second end support plate coupled to each second end of each cantilever
8 support beam, and with the second end support plate coupled to the vehicle floor.

1 22. The cantilever base support structure of claim 21, including at least one
2 additional support plate coupled to each support beam and located between the first

3 and second end support plates, with the additional support plate coupled to the vehicle
4 floor.

1 23. The cantilever base support structure of claim 22, wherein each end
2 plate and additional support plate is formed in a trapezoidal configuration.

1 24. The cantilever base support structure of claim 21, including a first pair
2 of occupant seats, with each seat cantilever coupled to the cantilever base structure
3 and with each seat of the first pair of occupant seats including a seat back and a seat
4 base.; and

5 a second pair of occupant seats, with each seat cantilever coupled to the
6 cantilever base structure a spaced distance from the first pair of occupant seats and
7 with each seat of the second pair of occupant seats including a seat back and a seat
8 base, with the seat base having a seat bottom.

1 25. The cantilever base support structure of claim 24, wherein the seat
2 back of each seat is configured to fold down over the seat base to form a folded seat.

1 26. The cantilever base support structure of claim 25, including a cross
2 beam member connected to the cantilever base structure and configured to support the
3 second pair of occupant seats.

1 27. The cantilever base support structure of claim 25, including a recline
2 mechanism coupled to the seat back and seat base to move the seat back with respect
3 to the seat base.

1 28. The cantilever base support structure of claim 26, wherein the folded
2 seats of the second pair of occupant seats is rotatably movable from a first position to
3 a second position, wherein the seat bottom faces away from the vehicle floor.

1 29. The cantilever base support structure of claim 28, wherein the seat
2 bottom includes a plurality of cargo tie-downs.

1 30. The cantilever base support structure of claim 24, wherein each seat of
2 the first pair of occupant seats is configured for at least one of a fore, aft, up, down,
3 and rotation movement of one of the seat base and seat back.

1 31. The cantilever base support structure of claim 30, including a seat
2 adjustment mechanism for adjustment movements of the seat.

1 32. The cantilever base support structure of claim 24, including a
2 reinforcement member coupled to the cantilever base structure and positioned under
3 the seat base of each one of the first and second pair of occupant seats.

1 33. The cantilever base support structure of claim of claim 32, including a
2 shroud member configured to contact the reinforcement member, with the shroud
3 member coupled to the cantilever base structure.

1 34. The cantilever base support structure of claim of claim 33, wherein the
2 shroud member is also engaged in a slot defined in the vehicle floor.

1 35. The cantilever base support structure of claim 24, including a seat
2 support structure comprising:

3 a carrier member configured to movably attach to the cantilever base structure;
4 and

5 a first cantilever support member having a distal end and coupled to the carrier
6 member and to the seat base of each of the first pair of occupant seats.

1 36. The cantilever base support structure of claim 35, including a second
2 cantilever support member having a distal end and coupled to the carrier member and
3 to the seat base of each of the first pair of occupant seats.

1 37. The cantilever base support structure of claim 36, wherein the distal
2 ends of each of the first and second cantilever support members are not connected to
3 any other structure of the vehicle.

1 38. The cantilever base support structure of claim 37, wherein the first and
2 second cantilever support members are configured in a triangular shape.

1 39. The cantilever base support structure of claim 35, wherein the
2 cantilever base structure includes a track assembly configured to engage the carrier
3 member.

1 40. The cantilever base support structure of claim 39, including an electric
2 motor drive mechanism coupled to the carrier member to move the carrier member
3 along the track assembly.

1 41. The cantilever base support structure of claim 35, including an
2 integrated seat belt having a shoulder belt.

1 42. The cantilever base support structure of claim of claim 41, wherein the
2 seat belt has one end including a retractor coupled to the cantilever support member
3 and another end coupled to the cantilever base support structure.

1 43. A method to increase storage and cargo space in a vehicle, with the
2 vehicle having a floor, the method comprising the steps of:

3 providing a cantilever base structure;

4 coupling the cantilever base structure to the vehicle, with the base structure
5 extending longitudinally in the middle of the vehicle;

6 providing a first pair of occupant seats;

7 coupling a cantilever support member having a distal end to each of the first
8 pair of occupant seats;

9 coupling each one of the first pair of occupant seats to the cantilever base
10 structure, with the first seat of the first pair on one side of the base structure and the
11 second seat of the first pair on the other side of the base structure opposite the first
12 seat of the first pair;

13 providing a second pair of occupant seats;

14 coupling a cantilever support member having a distal end to each of the
15 second pair of occupant seats; and

16 coupling each one of the second pair of occupant seats to the cantilever base
17 structure a spaced distance from the first pair of seats, with the first seat of the second
18 pair on one side of the base structure and the second seat of the second pair on the
19 other side of the base structure opposite the first seat of the second pair,
20 wherein the distal end of each cantilever support member is not connected to
21 any other structure of the vehicle allowing unobstructed space under each seat.

1 44. The method of claim 43, including the step of configuring at least one
2 of the seats for at least one of a fore, aft, up, down, and rotation movement.